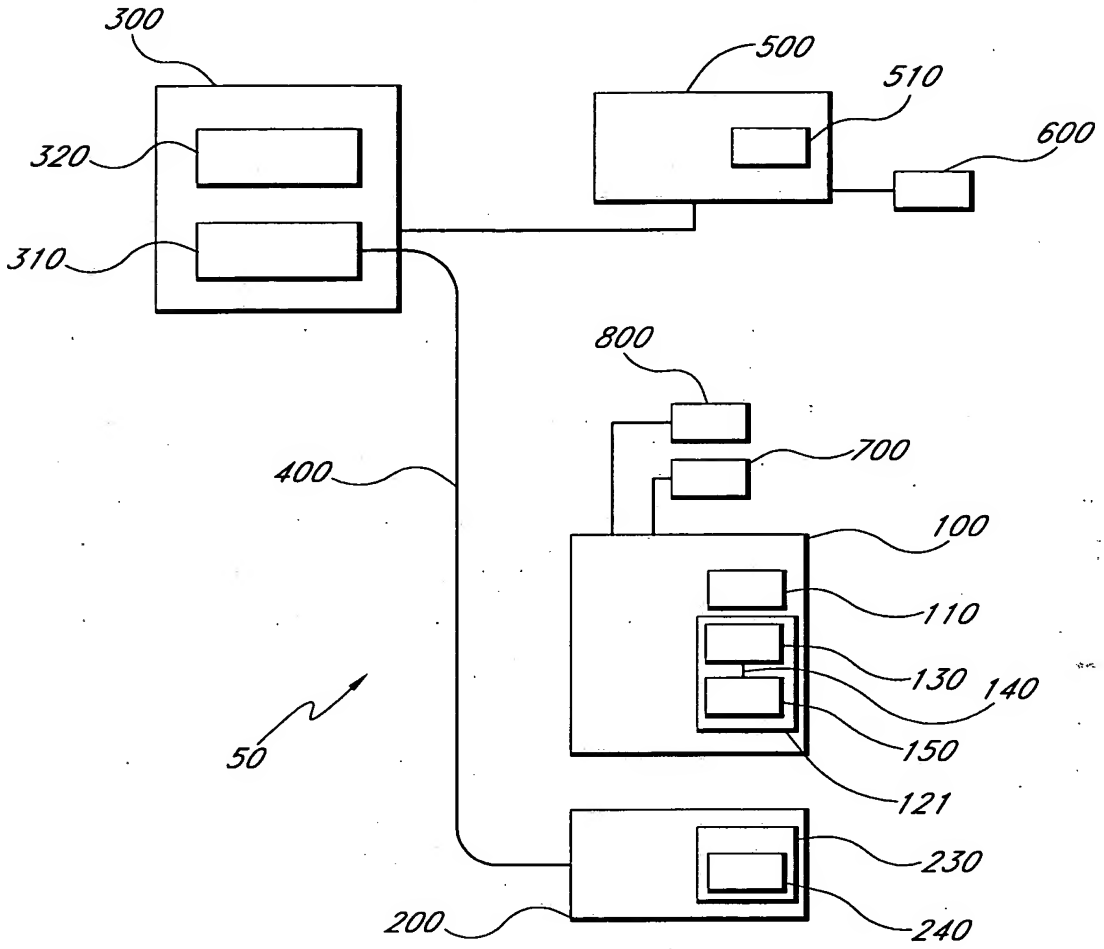
300
320
310
500
510
600
800
700
400
100
110
130
140
150
121
50
230
240
200

FIG. 1

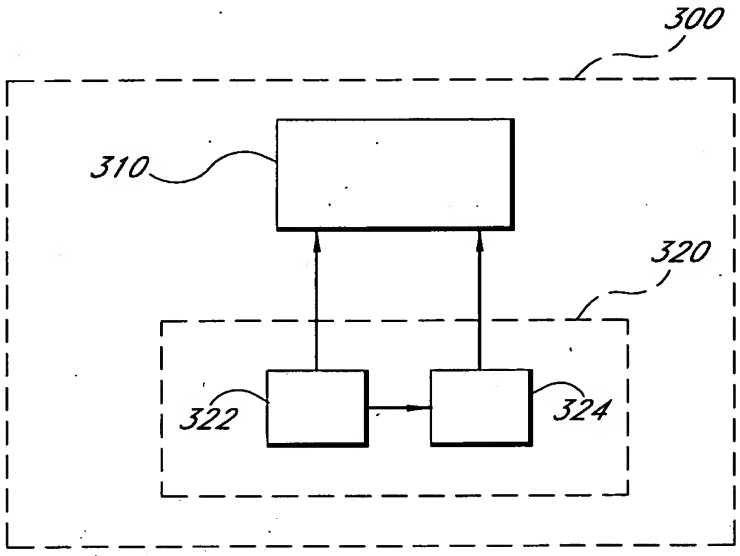

FIG. 2

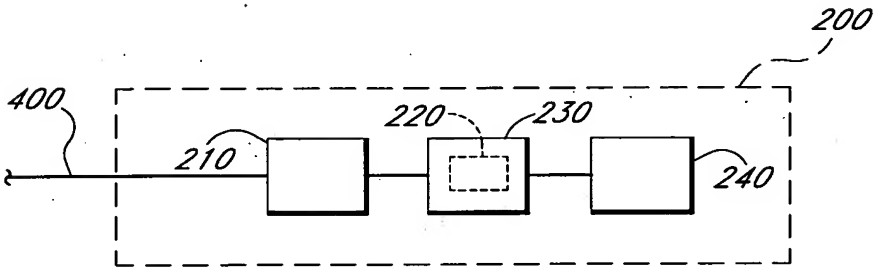

FIG. 3A

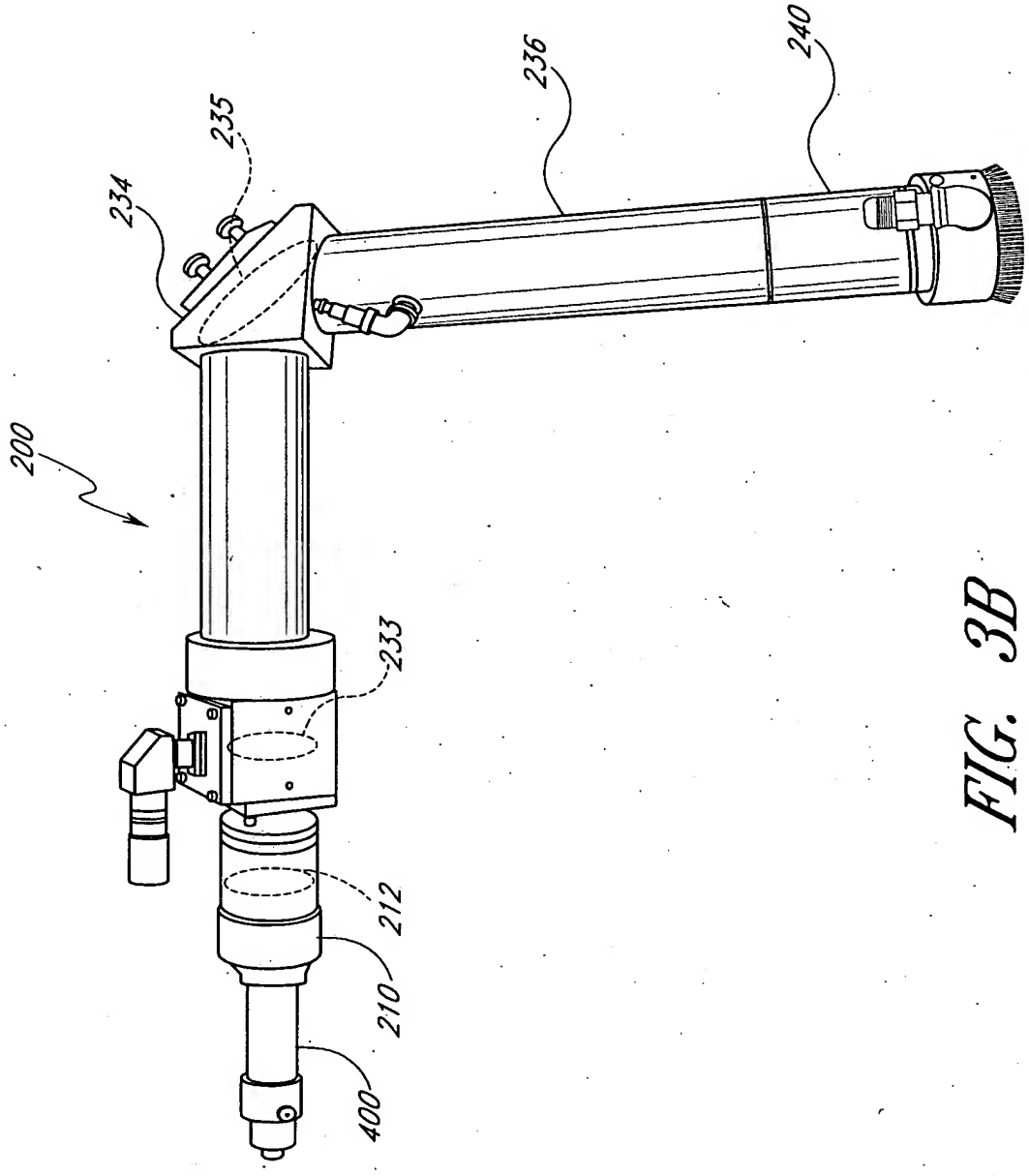

FIG. 3B

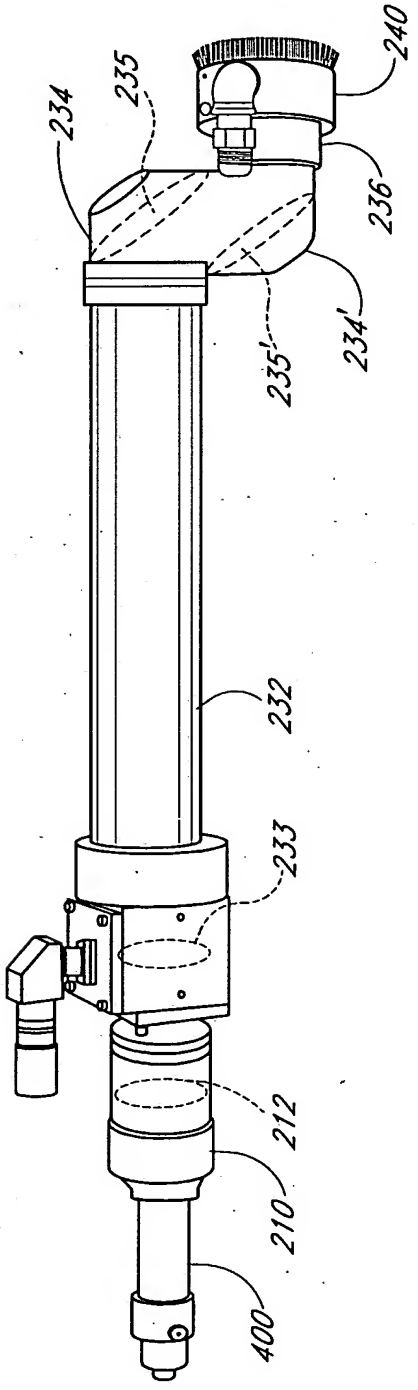

FIG. 3C

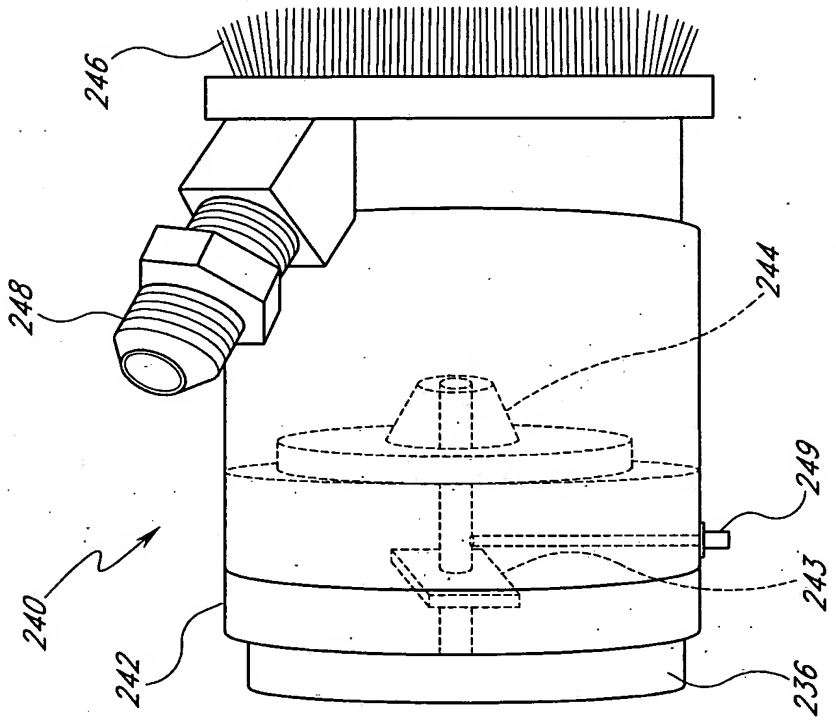

FIG. 4

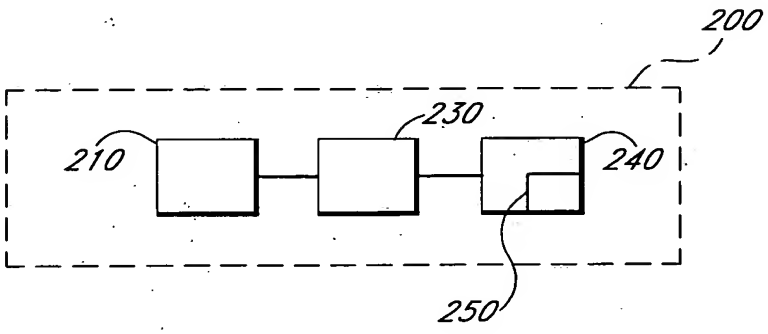

FIG. 5

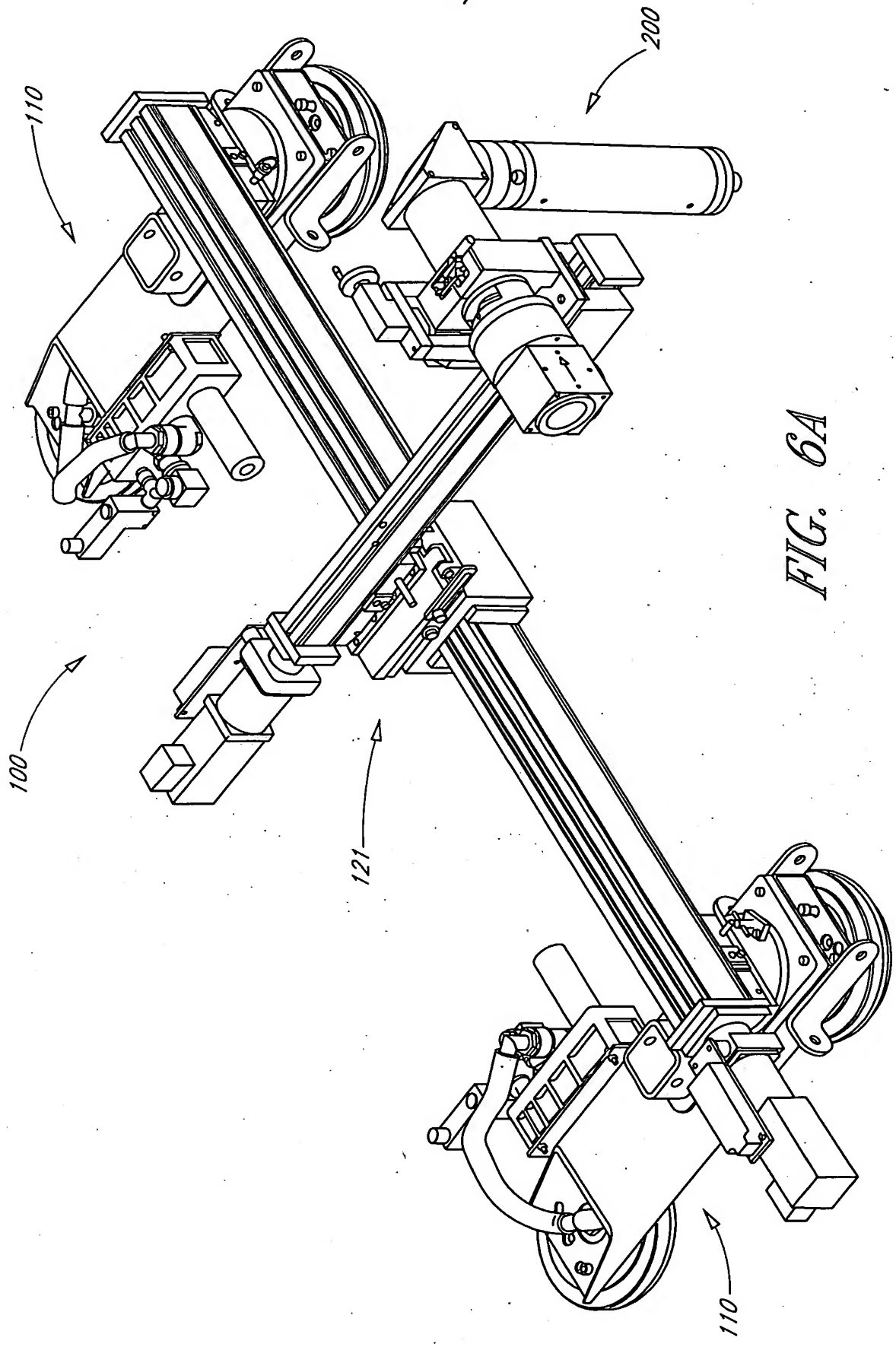

FIG. 6A

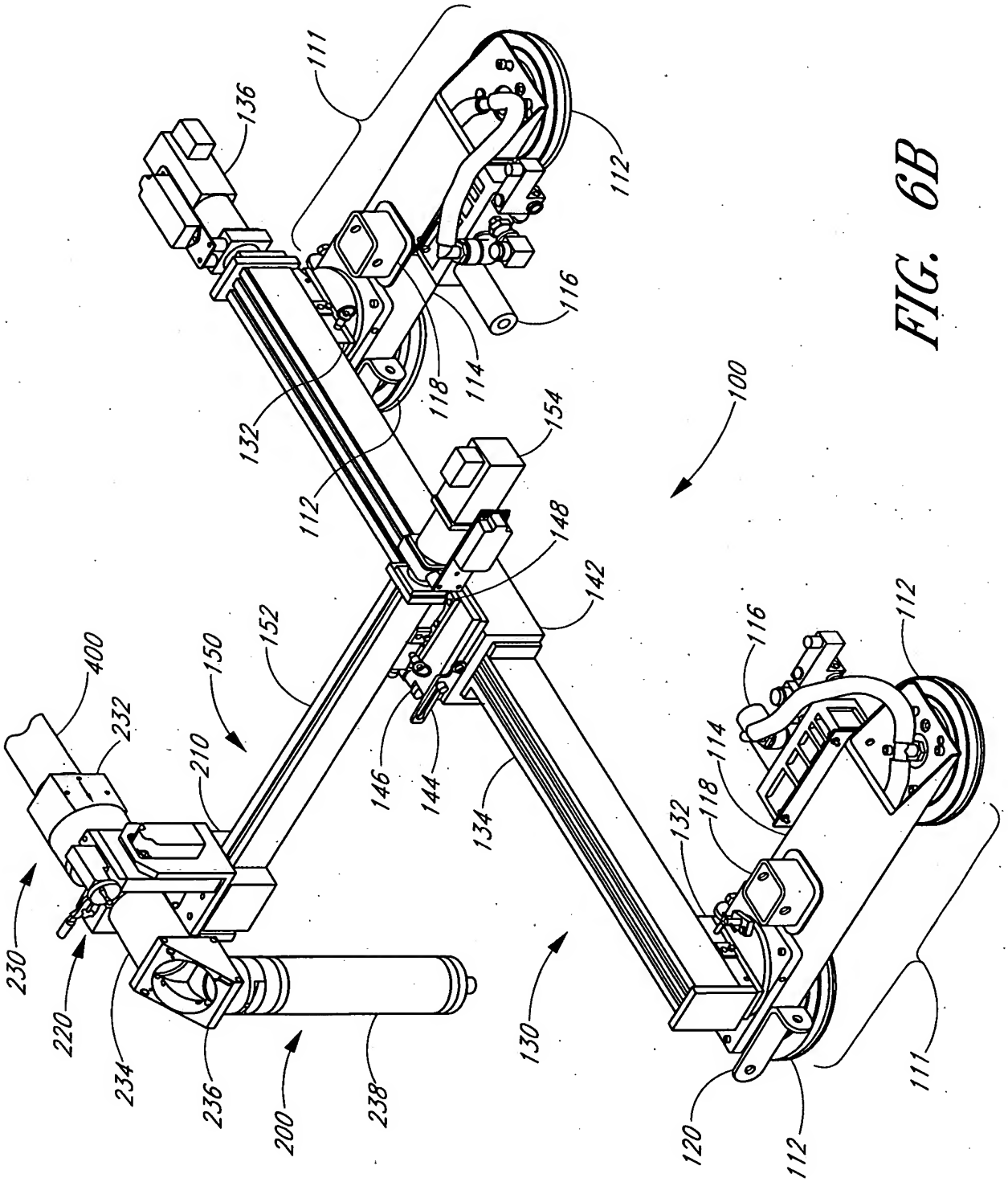
111
136
112
116
118
114
132
154
100
112
148
142
152
150
400
232
210
146
144
134
116
112
114
118
132
230
220
234
236
200
238
130
120
112
111

FIG. 6B

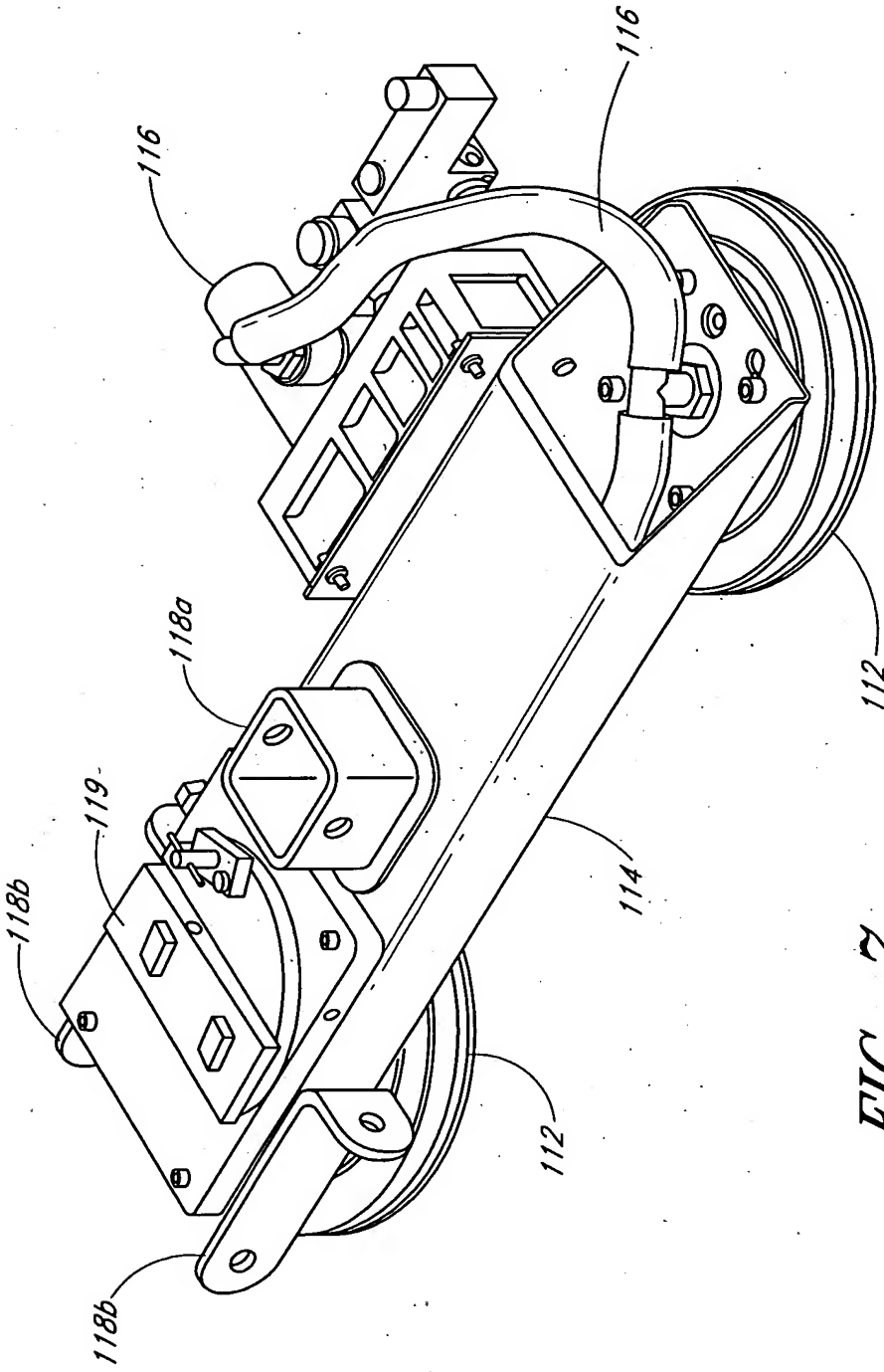

FIG. 7

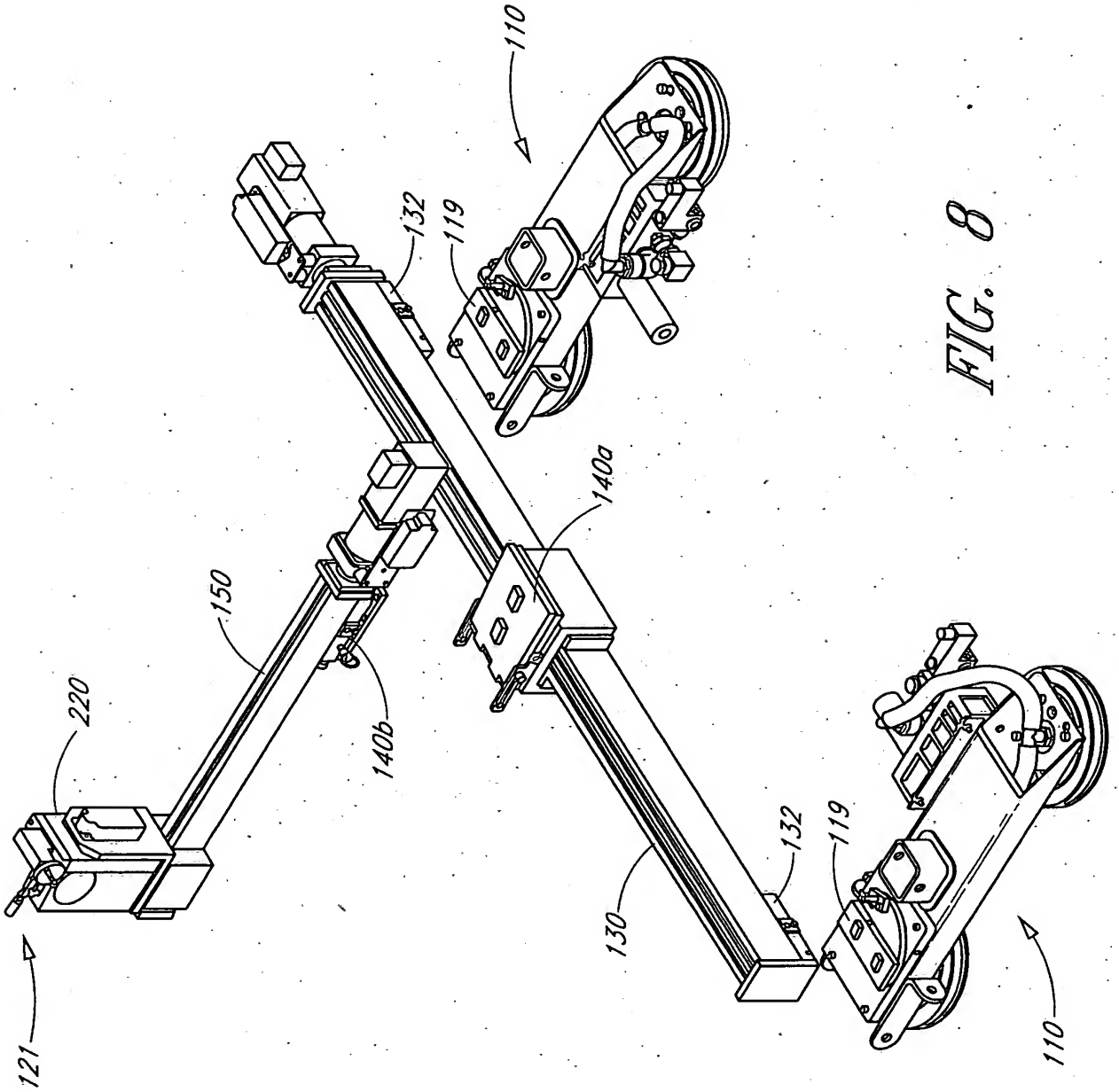

FIG. 8

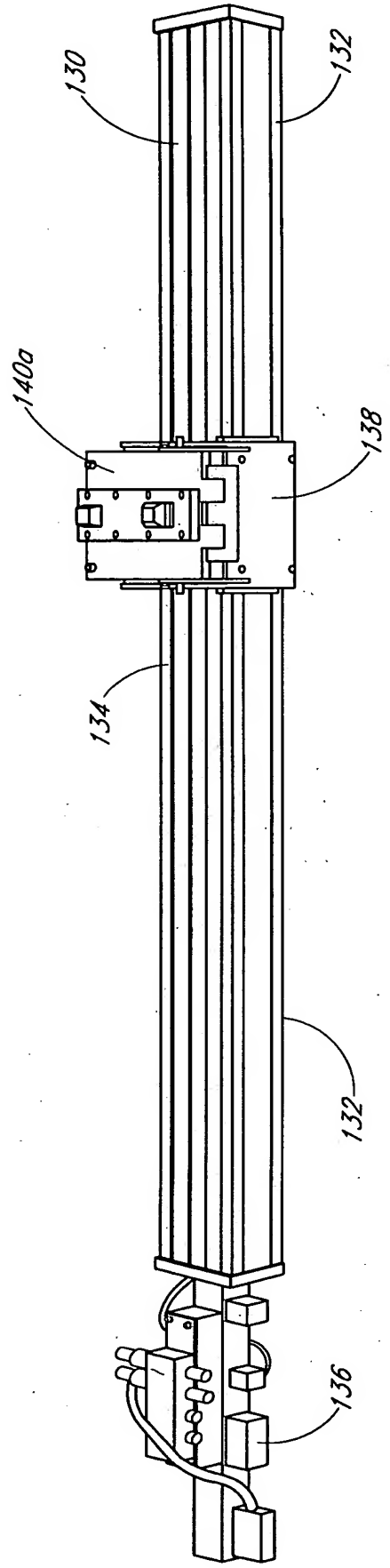

FIG. 9

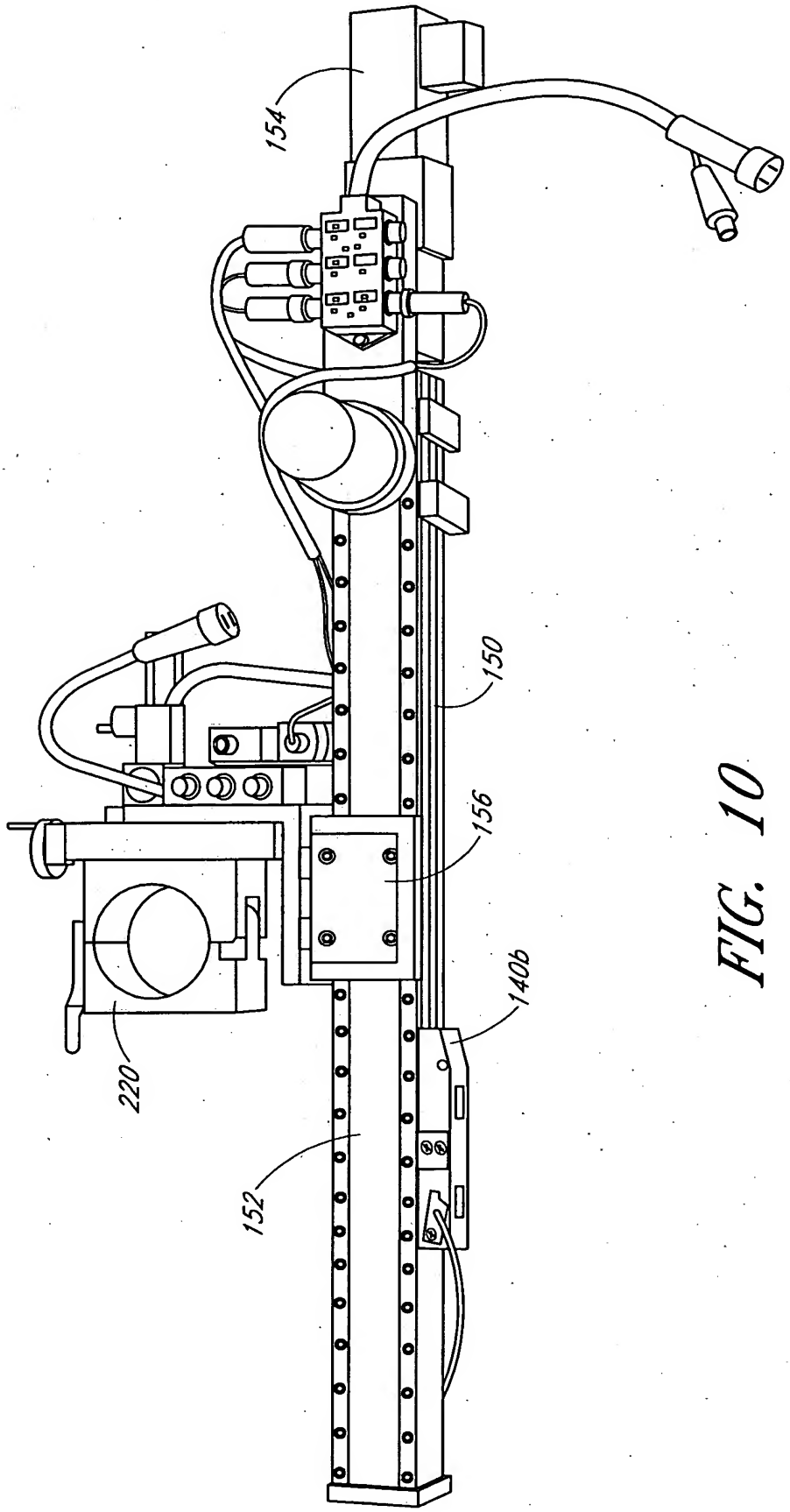

FIG. 10

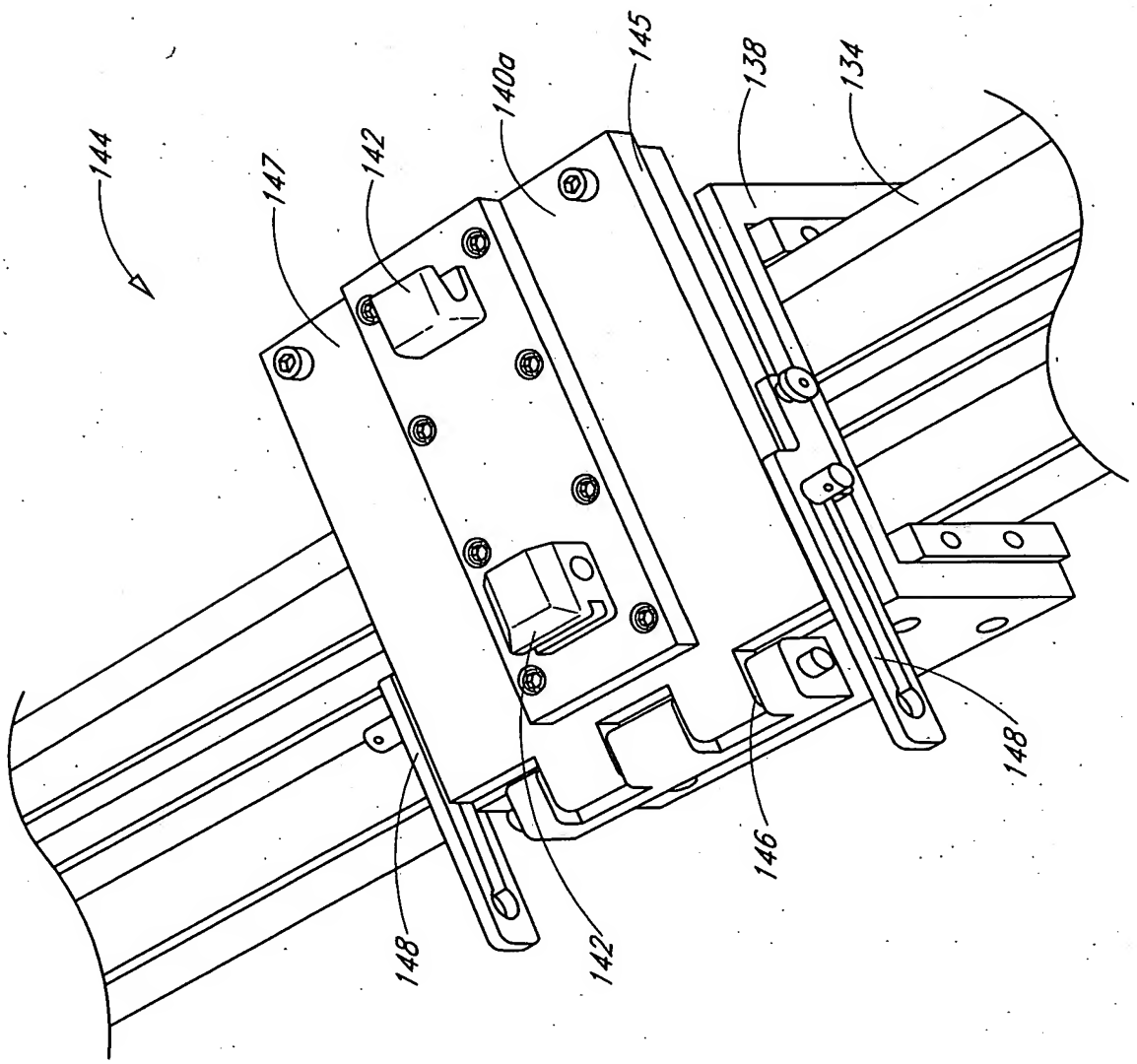

FIG. 11A

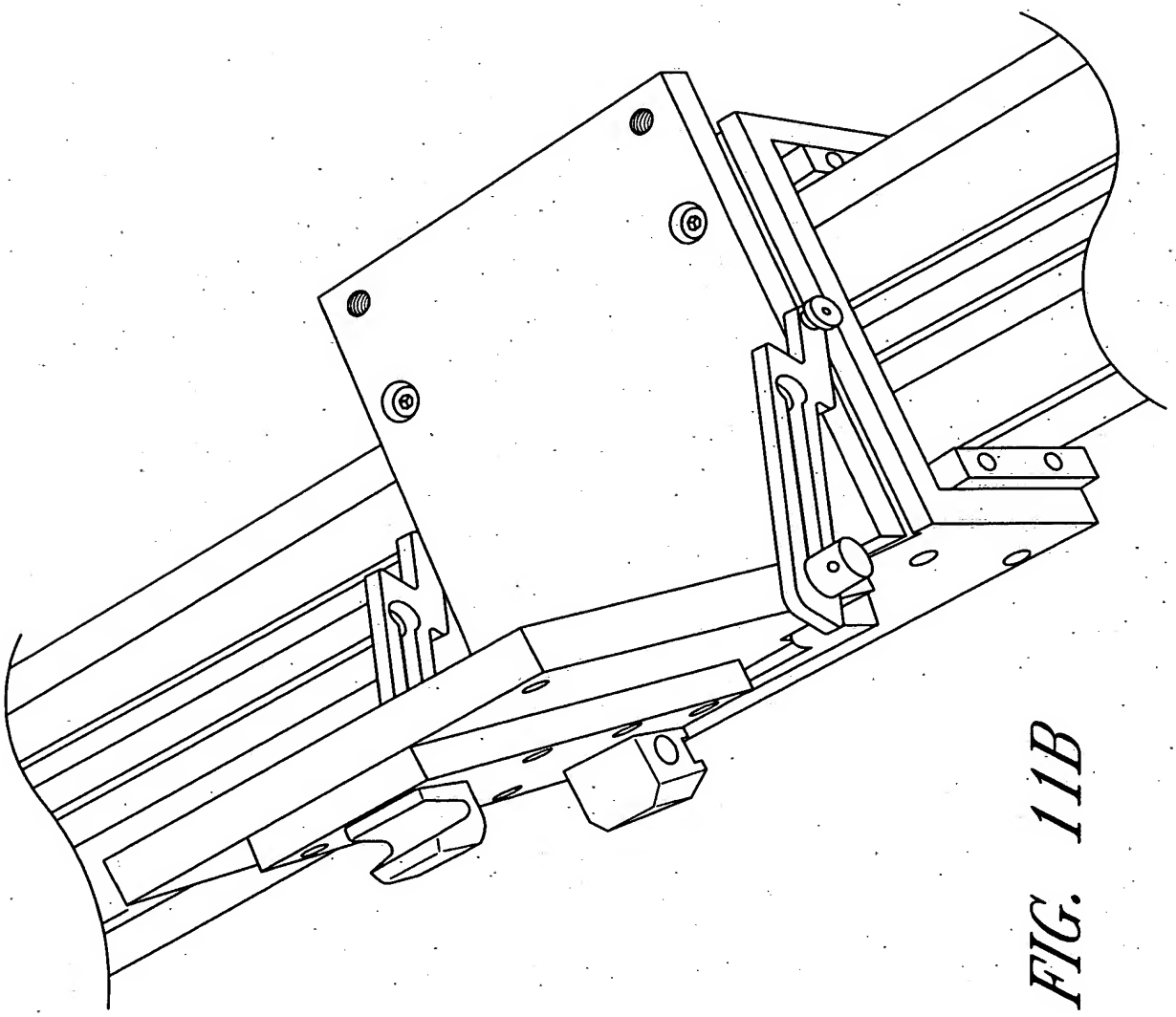

FIG. 11B

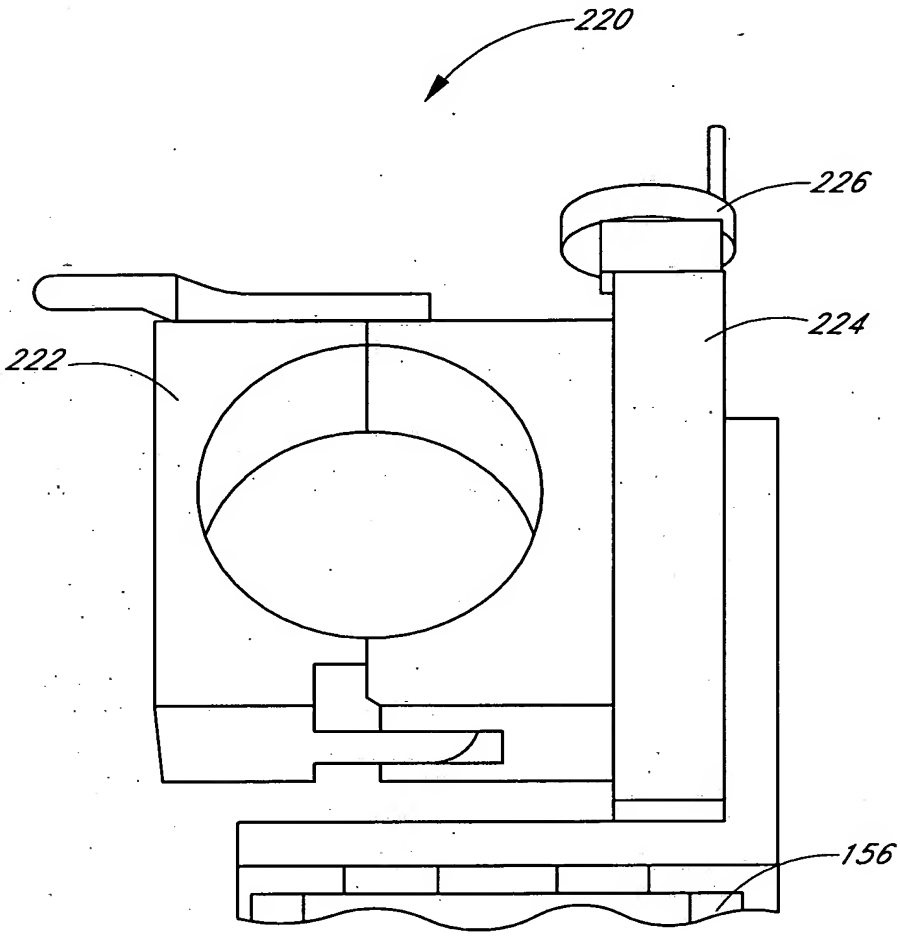

FIG. 12

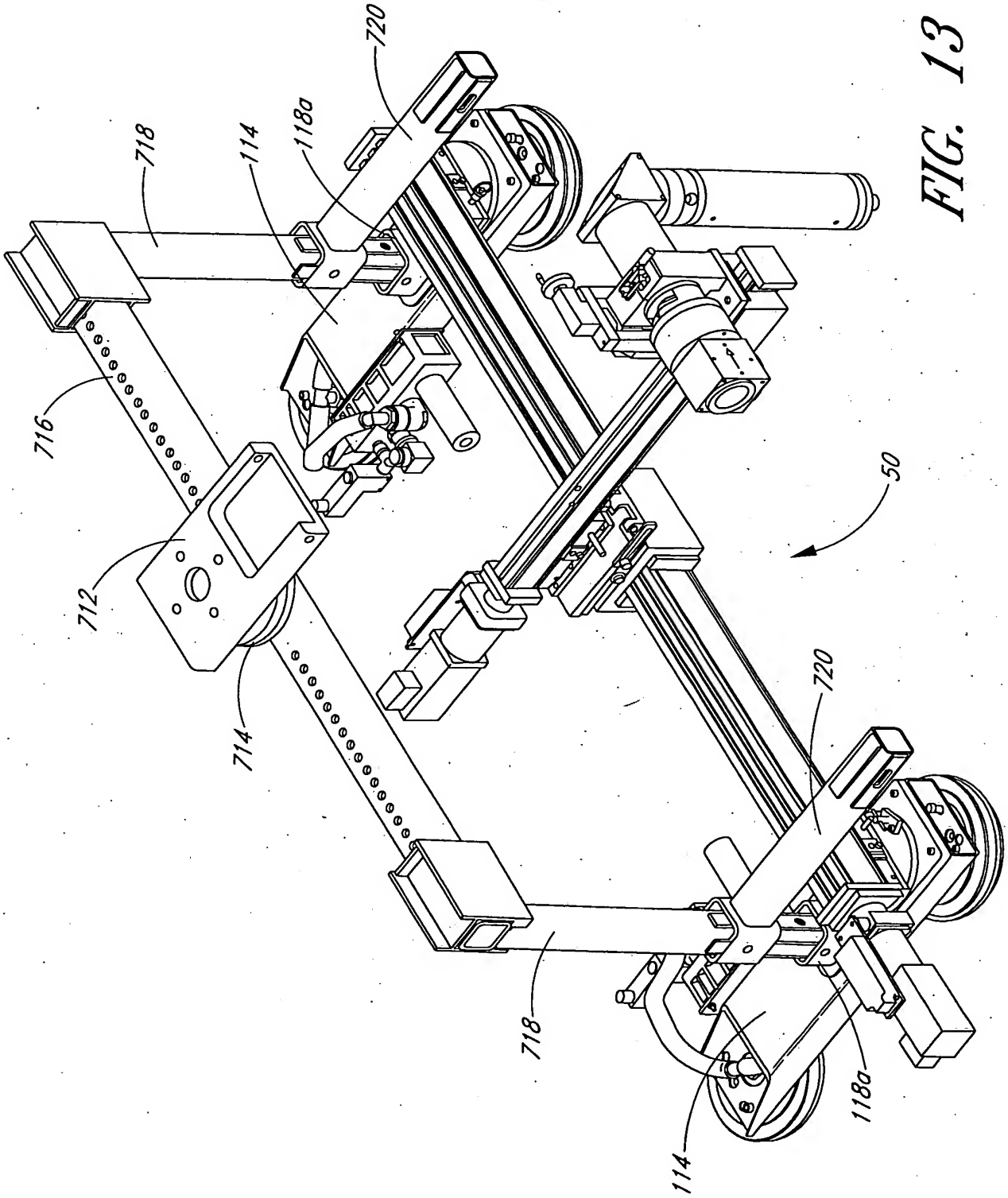

FIG. 13

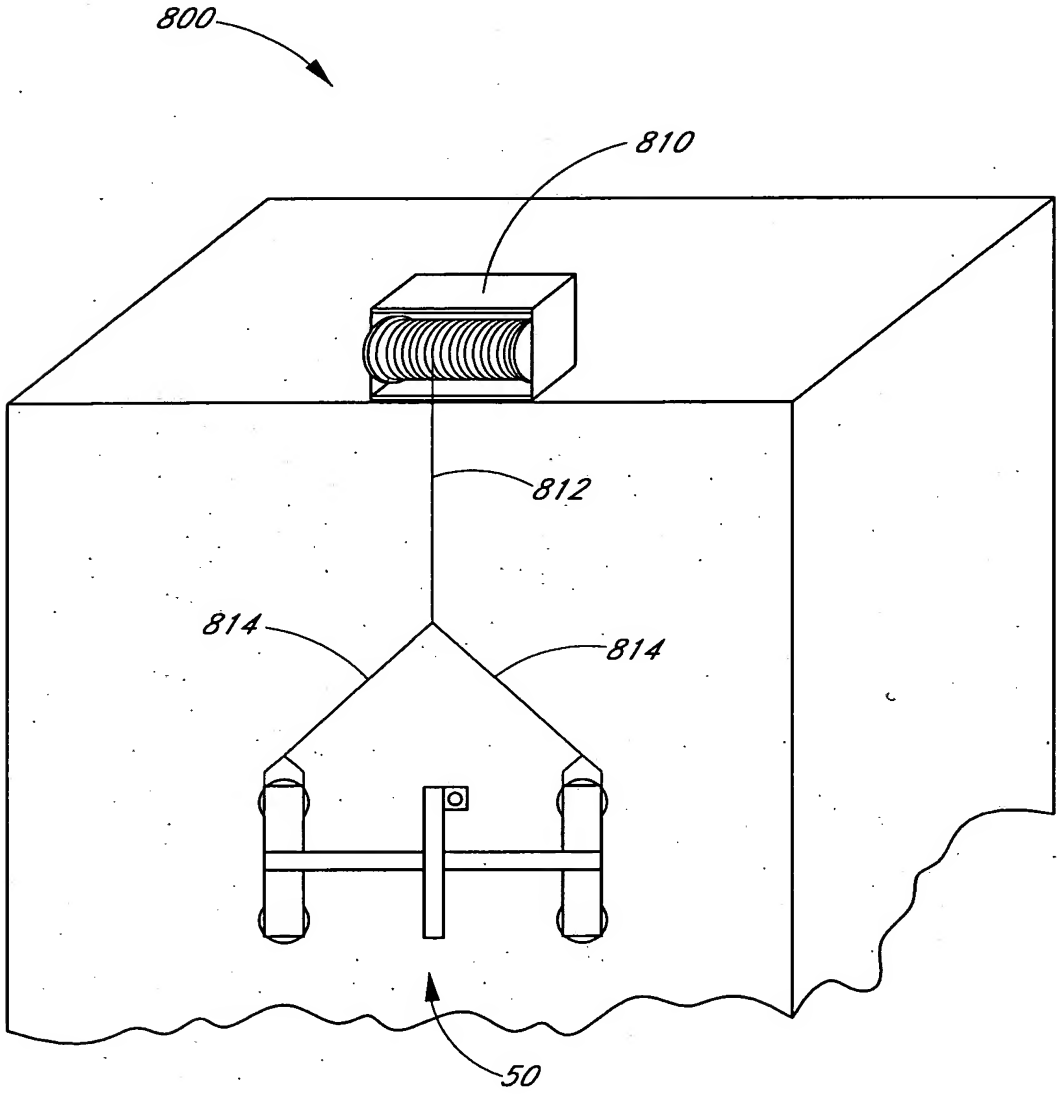

FIG. 14A

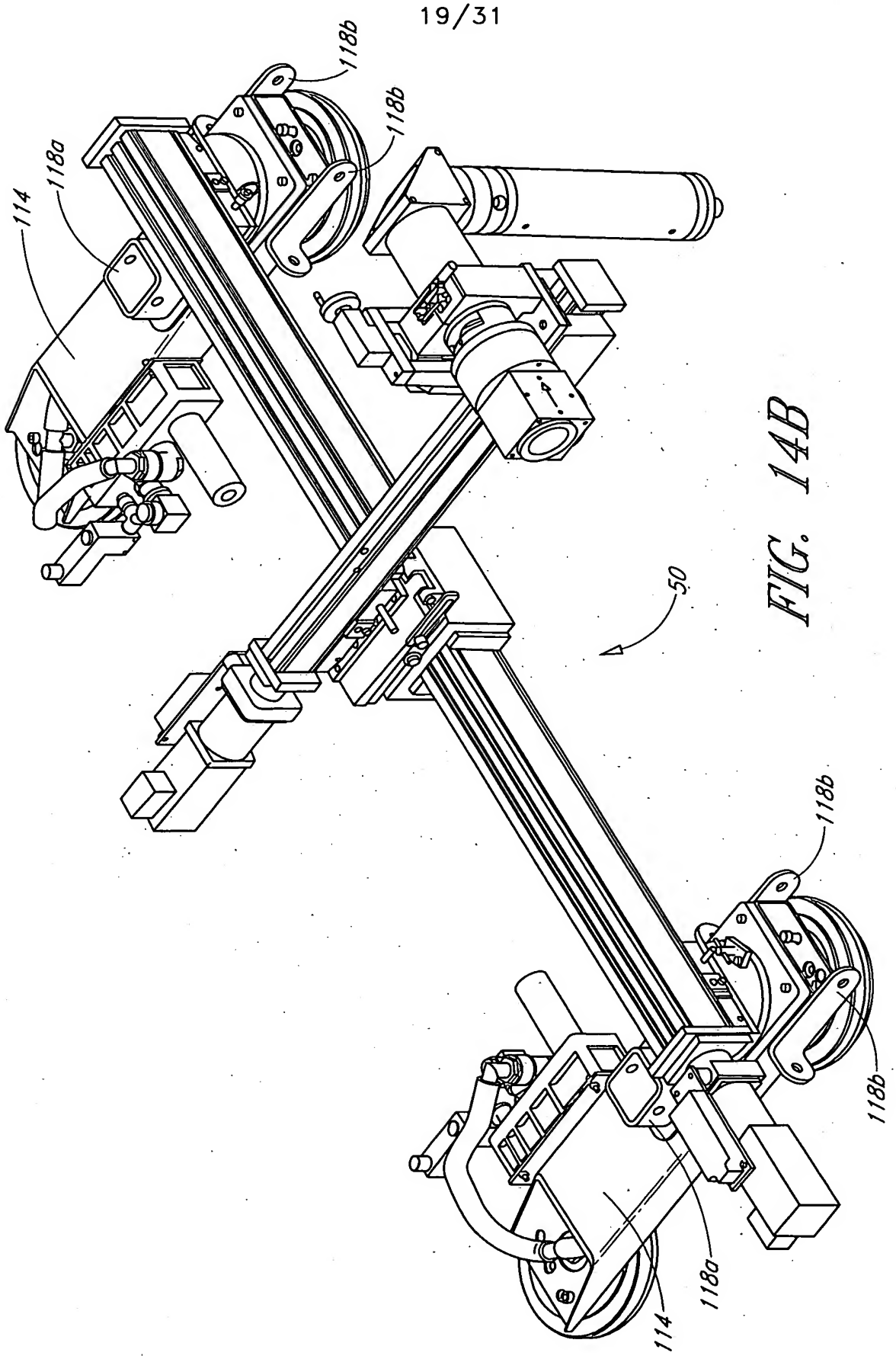

FIG. 14B

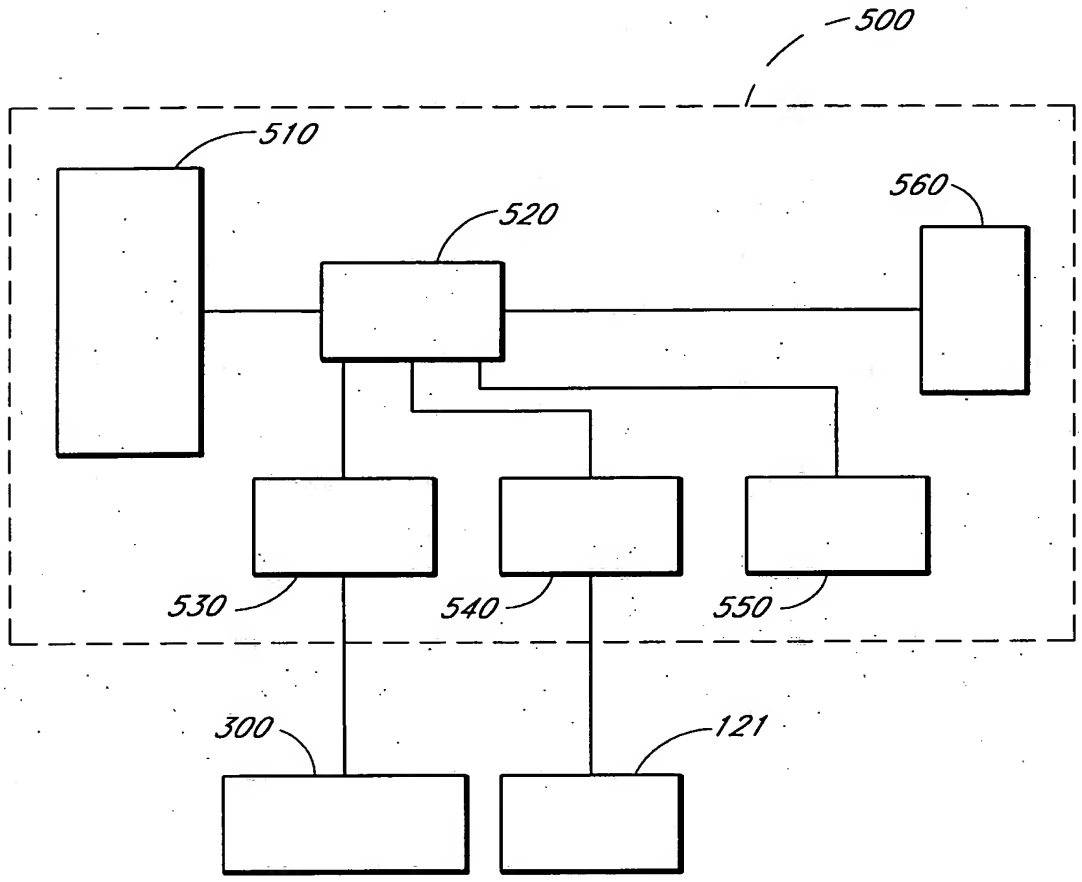

FIG. 15

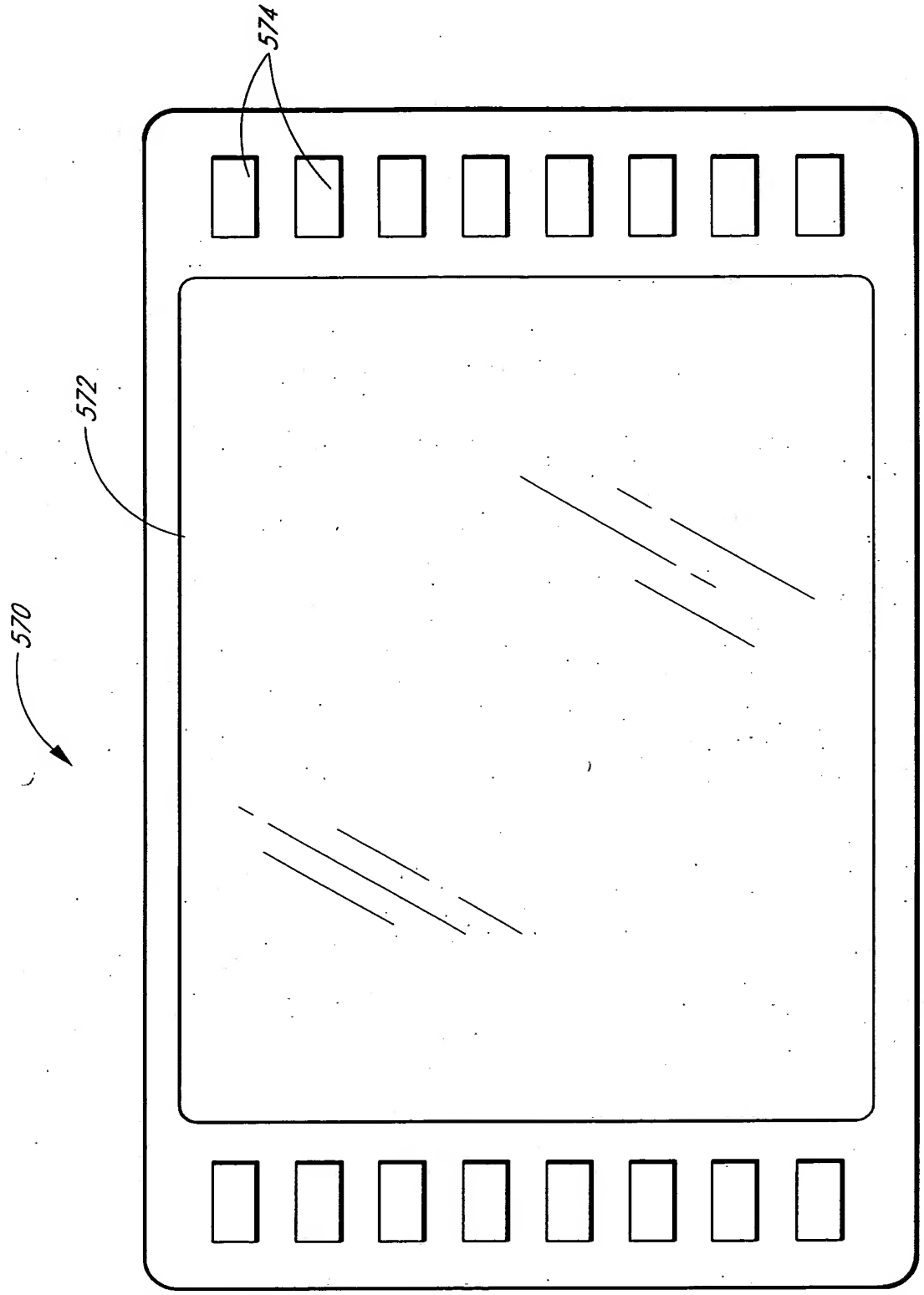

FIG. 16

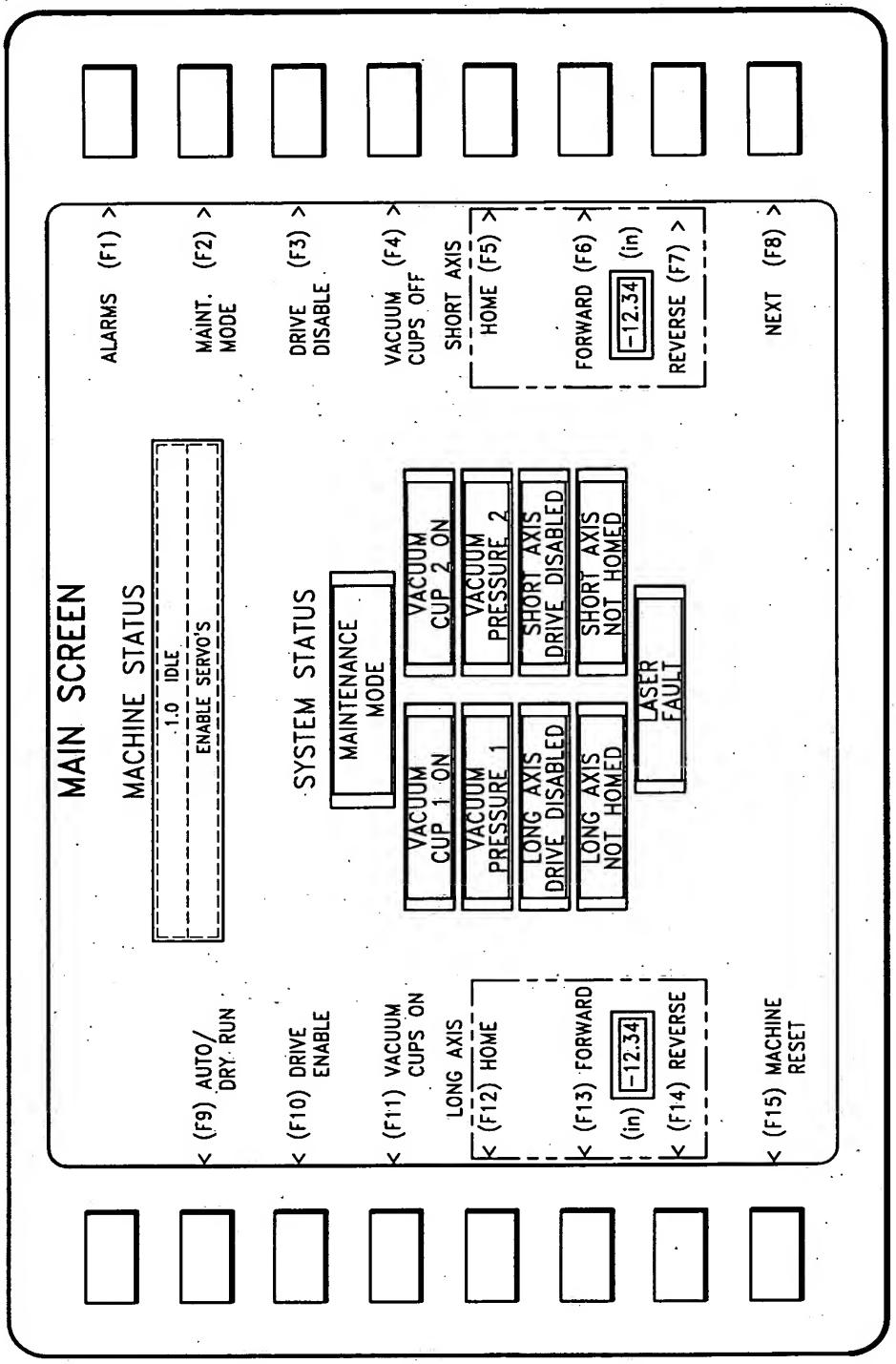
MAIN SCREEN
MACHINE STATUS
1.0 IDLE
ENABLE SERVO'S
SYSTEM STATUS
MAINTENANCE MODE
VACUUM CUP 1 ON
VACUUM PRESSURE 1
LONG AXIS DRIVE DISABLED
LONG AXIS NOT HOMED
VACUUM CUP 2 ON
VACUUM PRESSURE 2
SHORT AXIS DRIVE DISABLED
SHORT AXIS NOT HOMED
LASER FAULT
ALARMS (F1) >
MAINT. MODE (F2) >
DRIVE DISABLE (F3) >
VACUUM CUPS OFF (F4) >
SHORT AXIS
HOME (F5) >
FORWARD (F6) >
-12.34 (in)
REVERSE (F7) >
NEXT (F8) >
(F9) AUTO/ DRY RUN >
(F10) DRIVE ENABLE >
(F11) VACUUM CUPS ON
LONG AXIS
(F12) HOME >
(F13) FORWARD >
(in) -12.34
(F14) REVERSE >
(F15) MACHINE RESET >

FIG. 17A

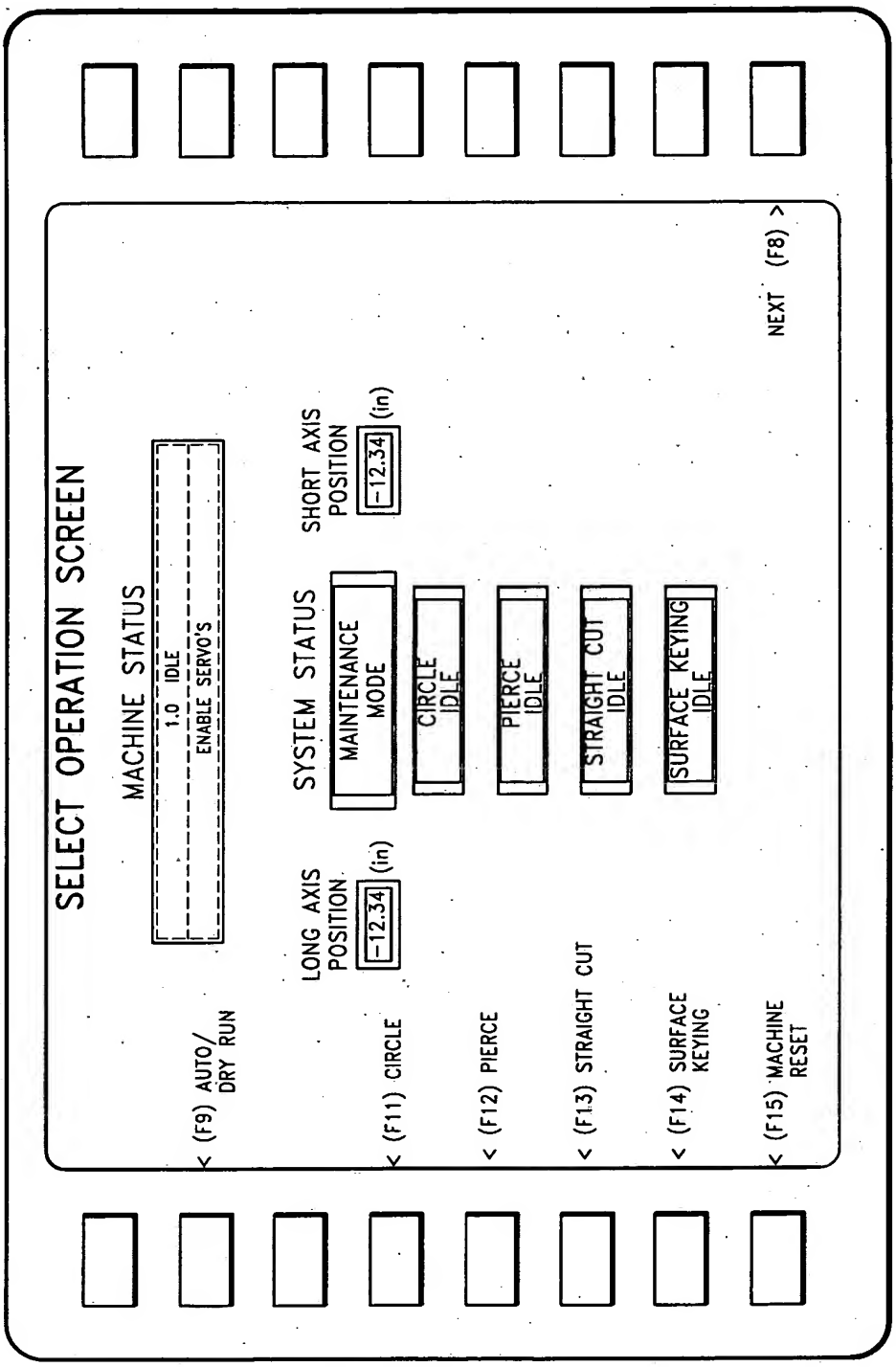
SELECT OPERATION SCREEN
MACHINE STATUS
1.0 IDLE
ENABLE SERVO'S
SYSTEM STATUS
MAINTENANCE MODE
CIRCLE IDLE
PIERCE IDLE
STRAIGHT CUT IDLE
SURFACE KEYING IDLE
LONG AXIS POSITION
-12.34 (in)
SHORT AXIS POSITION
-12.34 (in)
(F9) AUTO/ DRY RUN
(F11) CIRCLE
(F12) PIERCE
(F13) STRAIGHT CUT
(F14) SURFACE KEYING
(F15) MACHINE RESET
NEXT (F8) >

FIG. 17B

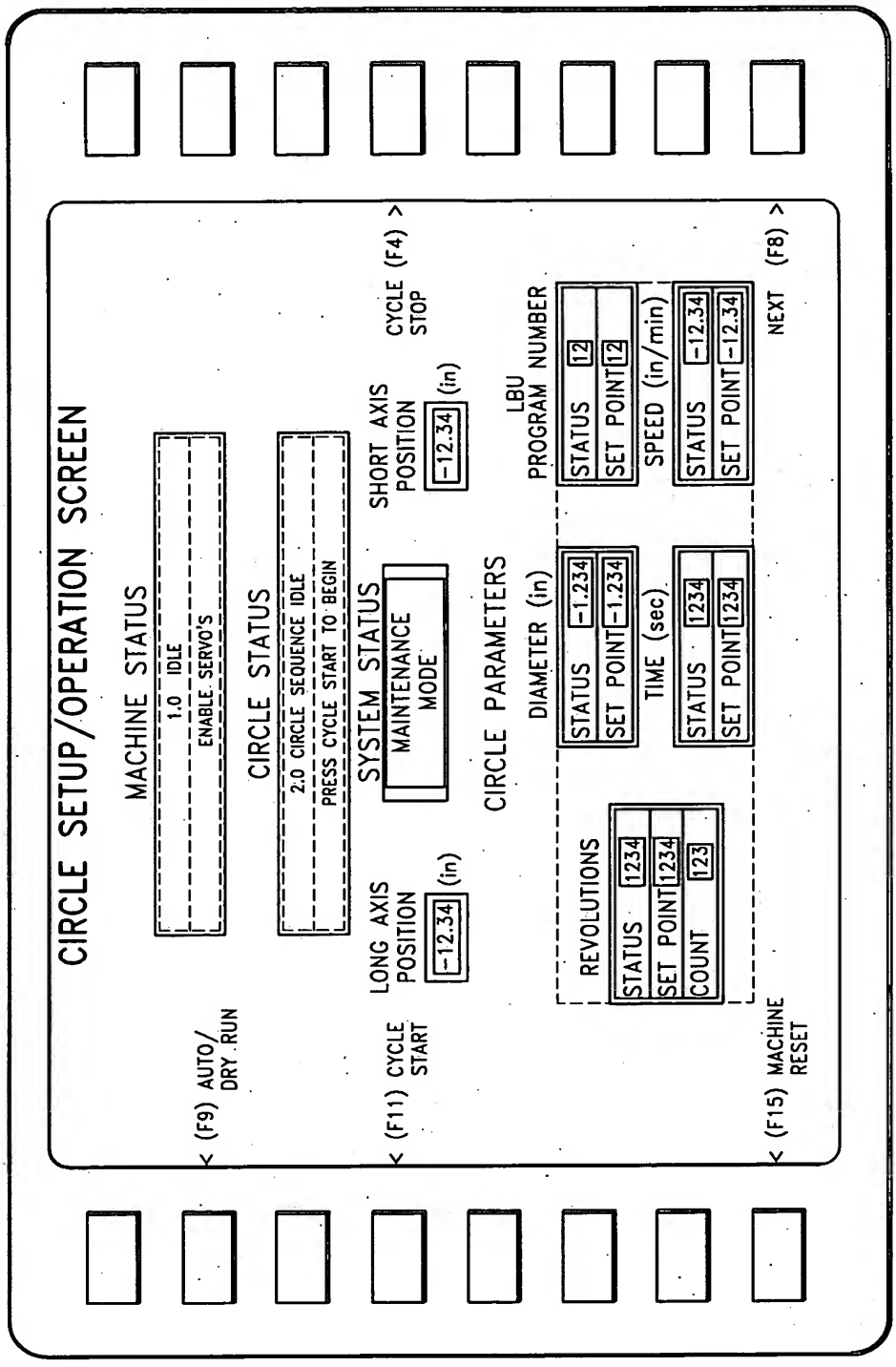
CIRCLE SETUP/OPERATION SCREEN
MACHINE STATUS
1.0 IDLE
ENABLE SERVO'S
CIRCLE STATUS
2.0 CIRCLE SEQUENCE IDLE
PRESS CYCLE START TO BEGIN
SYSTEM STATUS
MAINTENANCE MODE
SHORT AXIS POSITION
-12.34 (in)
CYCLE STOP (F4) >
LONG AXIS POSITION
-12.34 (in)
CIRCLE PARAMETERS
LBU PROGRAM NUMBER
DIAMETER (in)
STATUS 12
SET POINT 12
STATUS -1.234
SET POINT -1.234
SPEED (in/min)
TIME (sec)
STATUS -12.34
SET POINT -12.34
STATUS 1234
SET POINT 1234
REVOLUTIONS
STATUS 1234
SET POINT 1234
COUNT 123
NEXT (F8) >
(F9) AUTO/ DRY RUN
(F11) CYCLE START
(F15) MACHINE RESET

FIG. 17C

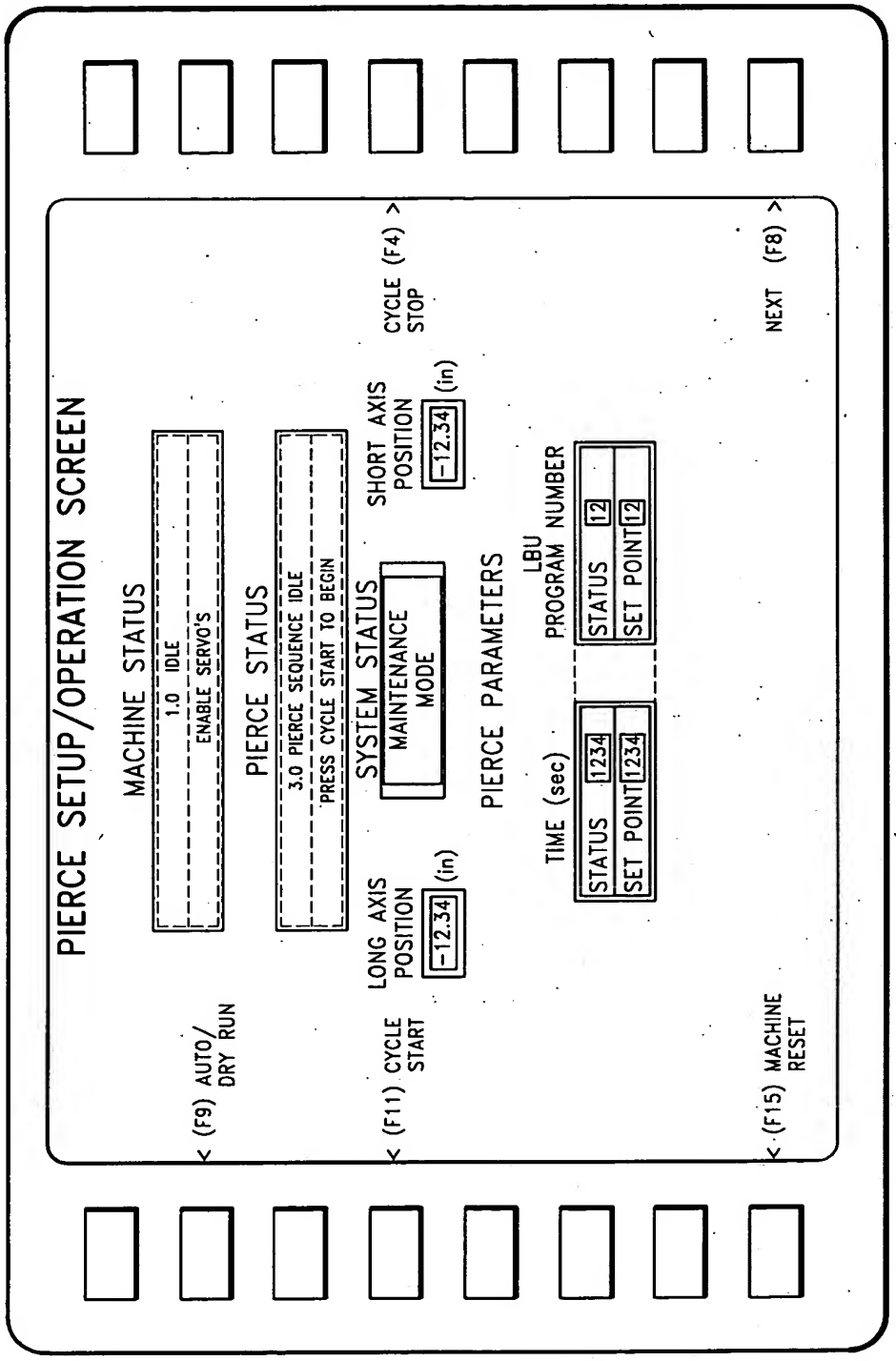
PIERCE SETUP/OPERATION SCREEN
MACHINE STATUS
1.0 IDLE
ENABLE SERVO'S
PIERCE STATUS
3.0 PIERCE SEQUENCE IDLE
PRESS CYCLE START TO BEGIN
SYSTEM STATUS
MAINTENANCE MODE
PIERCE PARAMETERS
TIME (sec)
STATUS 1234
SET POINT 1234
LBU PROGRAM NUMBER
STATUS 12
SET POINT 12
LONG AXIS POSITION -12.34 (in)
SHORT AXIS POSITION -12.34 (in)
CYCLE STOP (F4) >
NEXT (F8) >
(F9) AUTO/ DRY RUN
(F11) CYCLE START
(F15) MACHINE RESET

FIG. 17D

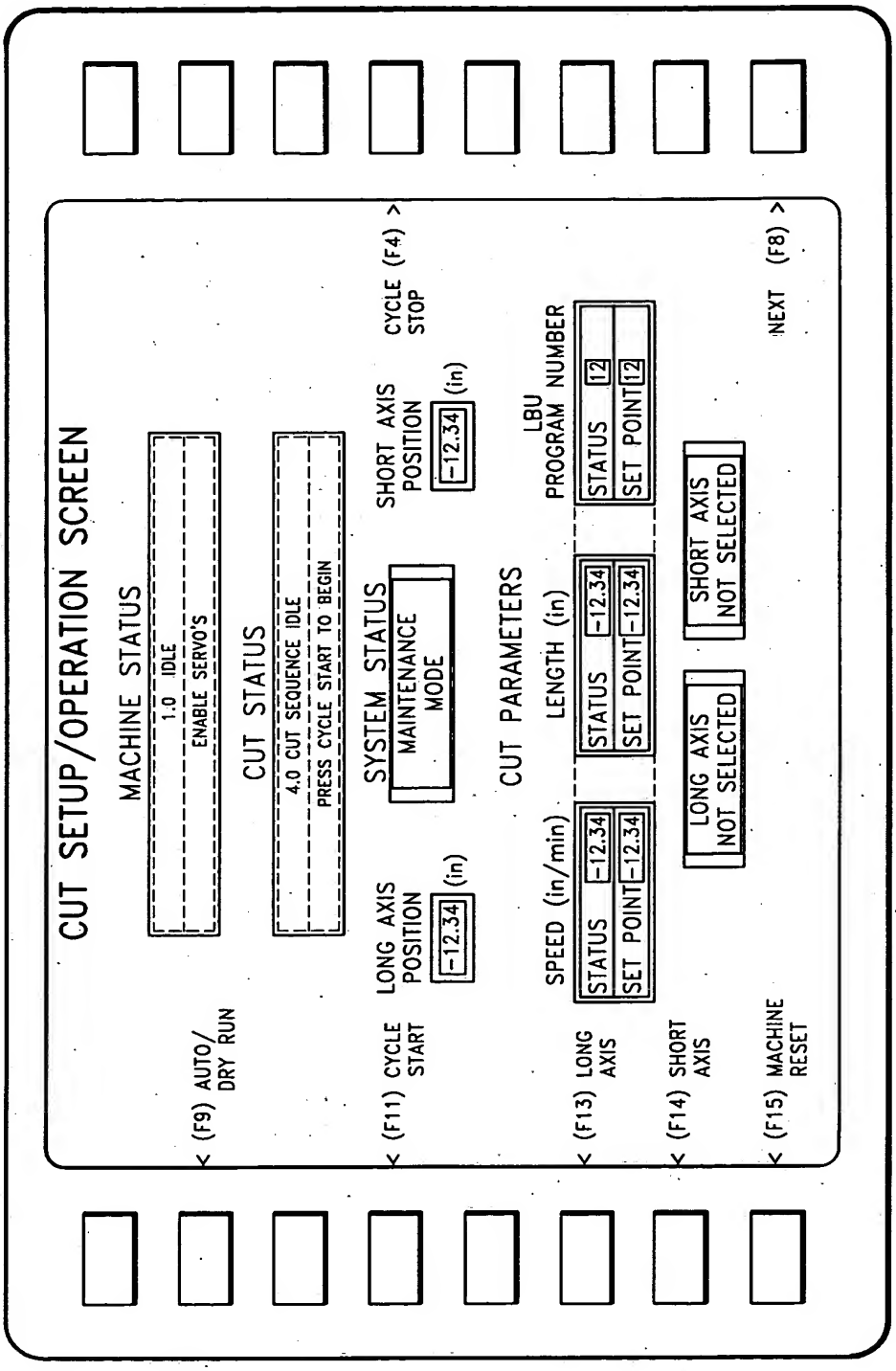
CUT SETUP/OPERATION SCREEN
MACHINE STATUS
1.0 IDLE
ENABLE SERVO'S
CUT STATUS
4.0 CUT SEQUENCE IDLE
PRESS CYCLE START TO BEGIN
SYSTEM STATUS
MAINTENANCE MODE
SHORT AXIS POSITION
-12.34 (in)
CYCLE STOP
CUT PARAMETERS
LBU PROGRAM NUMBER
STATUS 12
SET POINT 12
LENGTH (in)
STATUS -12.34
SET POINT -12.34
SHORT AXIS NOT SELECTED
LONG AXIS POSITION
-12.34 (in)
SPEED (in/min)
STATUS -12.34
SET POINT -12.34
LONG AXIS NOT SELECTED
NEXT (F8) >
(F9) AUTO/ DRY RUN
(F11) CYCLE START
(F13) LONG AXIS
(F14) SHORT AXIS
(F15) MACHINE RESET

FIG. 17E

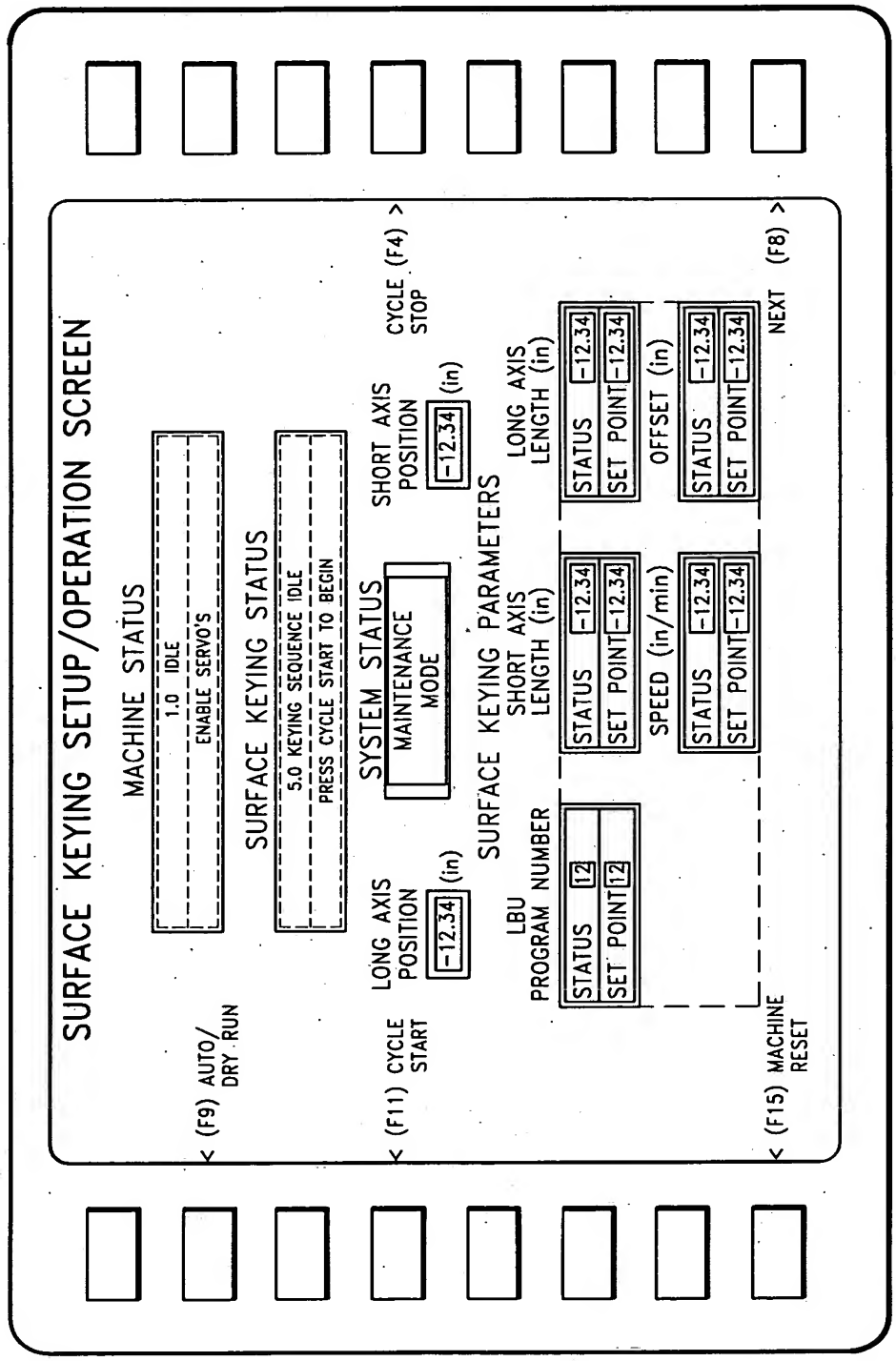
SURFACE KEYING SETUP/OPERATION SCREEN
MACHINE STATUS
1.0 IDLE
ENABLE SERVO'S
SURFACE KEYING STATUS
5.0 KEYING SEQUENCE IDLE
PRESS CYCLE START TO BEGIN
SYSTEM STATUS
MAINTENANCE MODE
SHORT AXIS POSITION
-12.34 (in)
CYCLE STOP (F4) >
LONG AXIS POSITION
-12.34 (in)
SURFACE KEYING PARAMETERS
LBU PROGRAM NUMBER
STATUS 12
SET POINT 12
SHORT AXIS LENGTH (in)
STATUS -12.34
SET POINT -12.34
SPEED (in/min)
STATUS -12.34
SET POINT -12.34
LONG AXIS LENGTH (in)
STATUS -12.34
SET POINT -12.34
OFFSET (in)
STATUS -12.34
SET POINT -12.34
NEXT (F8) >
(F9) AUTO/ DRY RUN
(F11) CYCLE START
(F15) MACHINE RESET

FIG. 17F

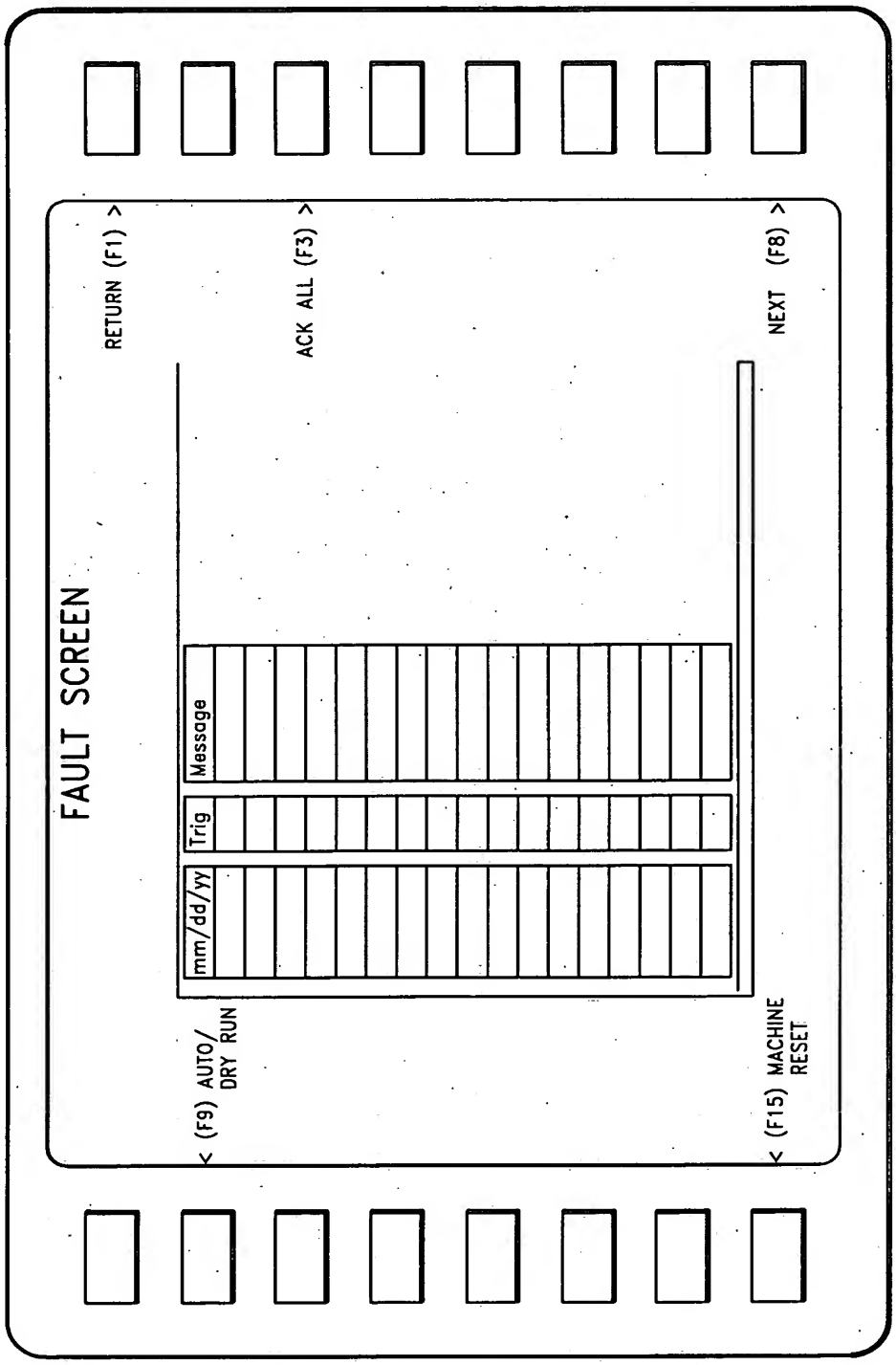
RETURN (F1) >
ACK ALL (F3) >
NEXT (F8) >
FAULT SCREEN
Message
Trig
mm/dd/yy
(F9) AUTO/ DRY RUN
(F15) MACHINE RESET

FIG. 17G

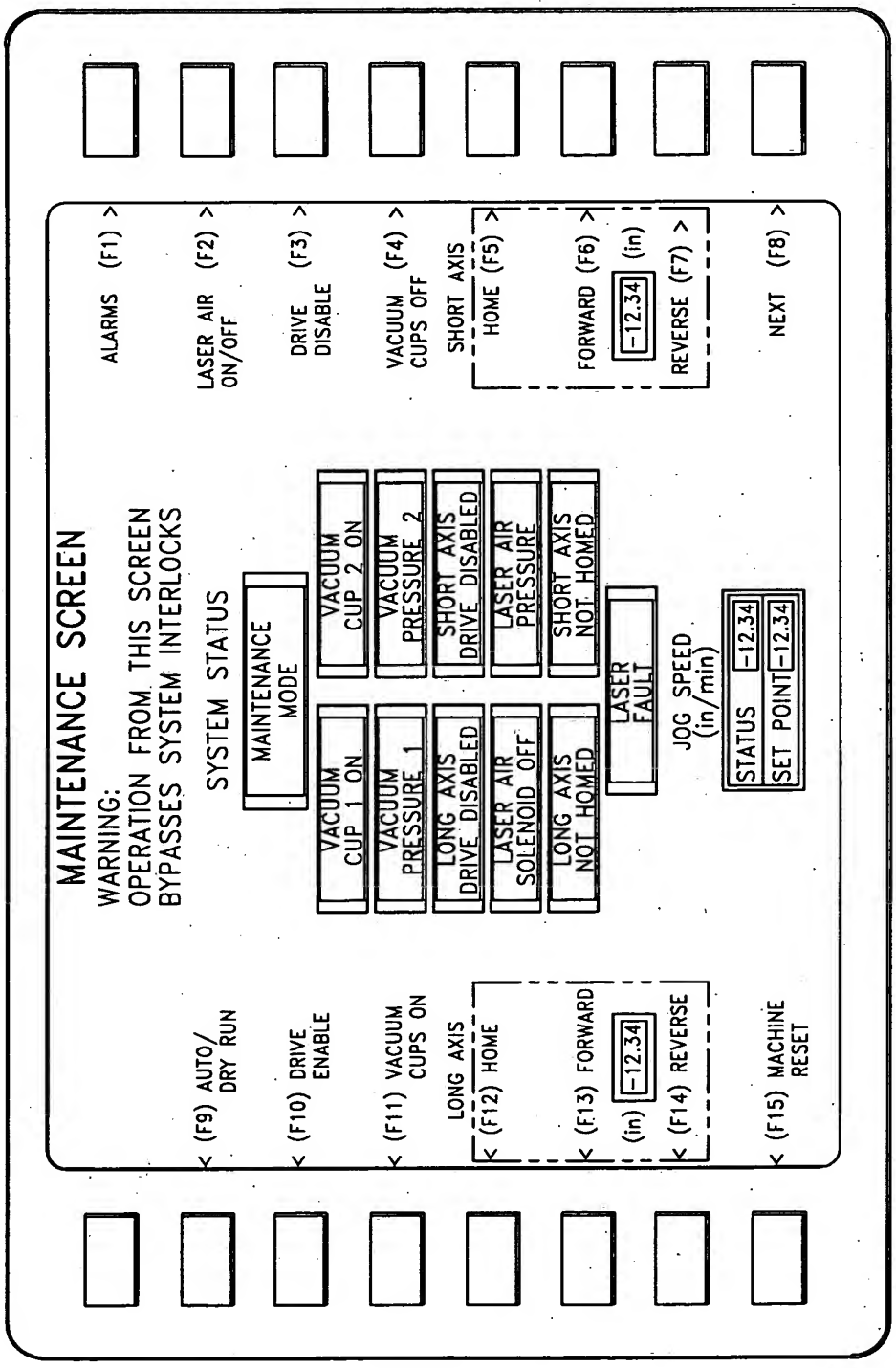
MAINTENANCE SCREEN
WARNING:
OPERATION FROM THIS SCREEN
BYPASSES SYSTEM INTERLOCKS
SYSTEM STATUS
MAINTENANCE MODE
VACUUM CUP 1 ON
VACUUM PRESSURE 1
LONG AXIS DRIVE DISABLED
LASER AIR SOLENOID OFF
LONG AXIS NOT HOMED
VACUUM CUP 2 ON
VACUUM PRESSURE 2
SHORT AXIS DRIVE DISABLED
LASER AIR PRESSURE
SHORT AXIS NOT HOMED
LASER FAULT
JOG SPEED (in/min)
STATUS -12.34
SET POINT -12.34
ALARMS (F1) >
LASER AIR ON/OFF (F2) >
DRIVE DISABLE (F3) >
VACUUM CUPS OFF (F4) >
SHORT AXIS
HOME (F5) >
FORWARD (F6) >
-12.34 (in)
REVERSE (F7) >
NEXT (F8) >
(F9) AUTO/ DRY RUN
(F10) DRIVE ENABLE
(F11) VACUUM CUPS ON
LONG AXIS
(F12) HOME
(F13) FORWARD
(in) -12.34
(F14) REVERSE
(F15) MACHINE RESET

FIG. 17H

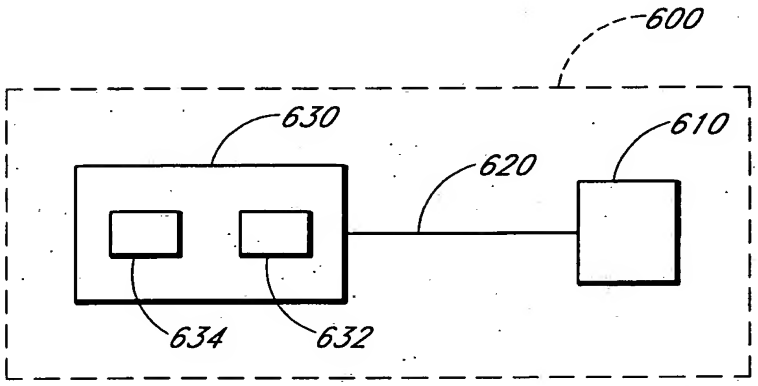

FIG. 18

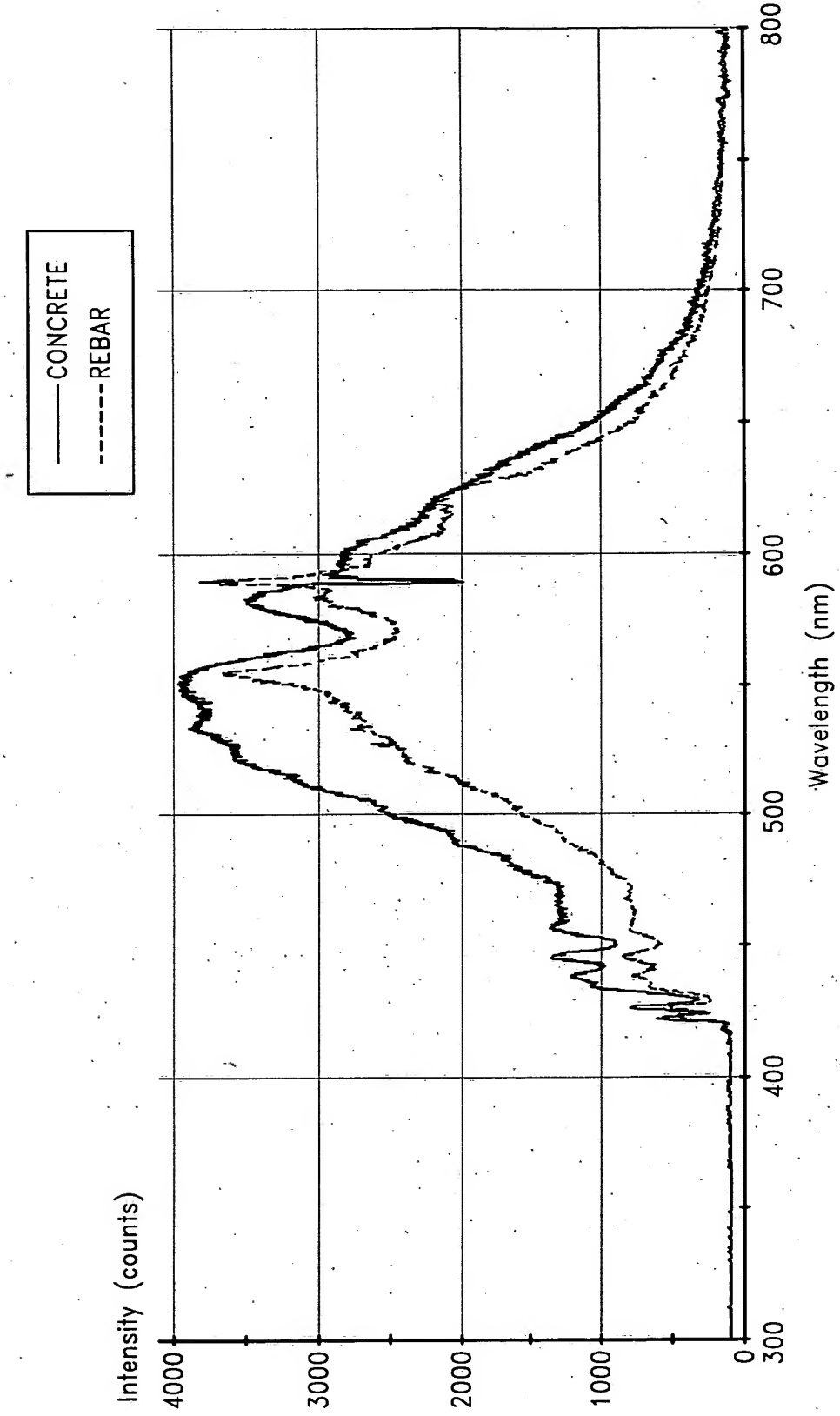
CONCRETE
REBAR
Intensity (counts)
4000
3000
2000
1000
0
300
400
500
600
700
800
Wavelength (nm)

FIG. 19